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ABSTRACT

Rules and guidelines are provided for subject indexing in the ERIC system. The principle of "subject access" is discussed with particular reference to "coordinate indexing," which involves designating subject content by unit terms (or tags) that may be put together or "coordinated" for subsequent retrieval. The nature of educational literature and the characteristics of educational community user groups are delineated in order to place ERIC indexing in proper perspective. Indexing tools necessary for the ERIC indexing process are also described. Detailed guidelines are presented on the indexing process itself, involving: (1) examination of the document; (2) identification of indexable information, e.g., population characteristics (including educational level), document form/type, curriculum or educational subject/field, activity, methodology, and materials; (3) translation and negotiation of indexable concepts into approved terminology, i.e., ERIC Descriptors and Identifiers. Additional guidance is offered on several special indexing issues, including specificity of indexing, weighting (major/minor terms), over- and under-indexing, and the indexing review process. (JH)

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ERIC®

PROCESSING MANUAL

Rules and Guidelines for the Acquisition, Selection, and Technical Processing of Documents and Journal Articles by the Various Components of the ERIC Network

SECTION 7: INDEXING

October 1980

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IR 050 071

SECTION VII: INDEXING

INDEXING

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INDEXING

SUMMARY OF SIGNIFICANT RULES

1. Descriptors used in the indexing process must be in the *Thesaurus of ERIC Descriptors*. (See Section VIII.)

2. The Identifier Field should be used to index specific entities, such as geographic location, project names, etc. Identifiers must be structured in conformance with the rules contained in Section VIII. Proposed Descriptors are entered in the Identifier field until approved and implemented in the *Thesaurus*.

3. The "major" subject matters of the document, whether expressed as Descriptors or Identifiers, must be asterisked (*) in order to distinguish them from the less substantial or "minor" topics. The following kinds of terms should be avoided as major, where possible:

   (a) Excessively broad terms, which lack discrimination (e.g., DEVELOPMENT), and which might otherwise collect large numbers of postings in a single journal issue;

   (b) Educational level, age level, methodology, or publication/document type terms, unless they are the subject of the document. *

   (c) Multiple terms beginning with the same word, thereby causing unnecessary repetitive access in the manual indexes.

4. At least one (1) major Descriptor must be assigned to a document; not more than five (5) major Descriptors are permitted for each document (six if only one major Identifier is used). There is, however, no upper limit on the total number of Descriptors that can be used to index a given document; the average for RIE is around eleven (11) per document.

5. There is no minimum requirement for Identifiers; no more than two (2) Identifiers should be designated as major.

6. Index to the specific level of subject matter covered by the document. Do not automatically index "up" to higher generic levels than the document actually deals with. Do not automatically index "down" to all the sub-elements of the level dealt with.

7. Index in depth, or exhaustively, all significant concepts covered in the document.

8. Index the document and exposition in hand; avoid indexing implications, possible uses, and other aspects referred to, but not actually dealt with.

*Revised September 1981

9. Index on the basis of the entire document, not just a part such as the "Introduction" or "Conclusions."

10. If a document is concerned with a particular educational (grade/academic) level, the indexer must index to that level.

11. Insofar as possible, index terms used should appear (in recognizable form) in the abstract (or title) of the document. This provides the user with a reassuring justification for the use of each index term for that particular item.

12. Index terms are written with initial capital letters. Except when used as the initial word, articles and connectives (prepositions and conjunctions) are not capitalized in a Descriptor. Exceptions to this rule occur in certain Identifiers, e.g., book titles such as "Graduate (The)."

13. Index terms are written without punctuation or special characters, with the sole exception being parentheses (to enclose a qualifier).

14. Over-indexing and under-indexing should be avoided. The excessive use of terms beginning with the same word can lead to over-indexing, as can the unrestrained listing of every concept contained in a small document. Under-indexing usually results from failure to assume the searcher's point of view.

VII. INDEXING

A. Introduction

Any collection of books, articles, reports, or any other recorded information, is of value only when the items in the collection are accessible and can be retrieved. The purpose of indexing is to be able to locate items in a collection according to the characteristics of those items. Access points may be virtually any of the fields of data recorded for the items, e.g.:

- personal author;
- title;
- report number;
- contract number;
- corporate source;
- language;
- accession number;
- subject;
- publication type.

The development of the various non-subject data fields is usually called "Descriptive Cataloging"; the development of the subject-oriented data fields is usually called "Subject Indexing." This section is concerned with the latter, i.e., establishing access to documents by their subject matter.

B. Subject Access

An indexer can establish subject access to the items in a collection in various ways:

- assignment of conventional library "Subject Headings," as can be found on Library of Congress printed catalog cards, e.g. "NUCLEAR REACTORS——TABLES, CALCULATIONS, ETC."

- assignment of the item to a position (identified by number) in a classification scheme, such as the Dewey Decimal Classification or the Library of Congress Classification, e.g., 510.78 or QA76.53.

- identification of key words (as opposed to trivial words) in the title (and perhaps abstract) of the document.

- assignment of index terms other than the conventional library type, e.g., these are called variously "tags," "descriptors," "unit terms," etc.

In ERIC, the indexing system is of the last type. The principal index terms are called Descriptors and the techniques followed are generally those that have been developed over the years under the rubric "Coordinate Indexing." It is not the task of this section to

discuss all types of indexing. It is necessary, however, to spend some time on the nature of, and the rationale behind, Coordinate Indexing.

C. Coordinate Indexing

1. General

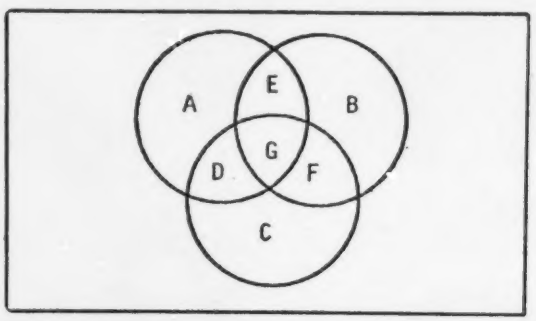
Coordinate Indexing arose from the need to perform indexing in depth. The report literature that began to burgeon in the 1940's could not be adequately characterized, in terms useful for working scientists and technicians, via two or three library subject headings affixed to 3x5 catalog cards. Those working with the report literature desired rather to attach a term or tag to every significant concept in the report. This often involved 10-20 concepts. The possible combinations in subject headings form would have been prohibitive.

The solution arrived at was to largely eliminate the relationships between concepts and rely on unit concepts. The relationships are then picked up or re-constructed by combining several terms in the search procedure. The assignment of index terms which are meant to be put together or coordinated at the time a search is conducted is called "Coordinate Indexing," because the searcher must coordinate the index terms to arrive at the desired result.

2. Searching a File That Has Been Coordinate Indexed

The entire justification for the indexing process lies in the retrieval/searching process. It is important, therefore, for the indexer to understand how searches are conducted. It is a standard admonition to indexers for them to put themselves in the shoes of the searcher.

The strategy used in searching in a coordinate indexing system is generally based on set theory and Boolean* logic. Drawn below is a Venn* diagram consisting of three overlapping circles, labeled A, B, and C. The areas of overlap of two circles are labeled D, E, and F. The overlap of all three is called G.



*See Glossary for definitions.

Let us suppose:

- Circle A represents the documents in the ERIC collection indexed by the Descriptor TEACHING METHODS.
- Circle B represents the documents indexed by the Descriptor SCIENCES.
- Circle C represents the documents indexed by the Descriptor DISADVANTAGED.

The areas of overlap (D, E, and F) represent those documents indexed by *two* of the Descriptors. Area G represents those indexed by all *three* Descriptors.

In phrasing a search question requesting material on methods of teaching science to the disadvantaged, the searcher might specify those documents indexed by both the terms TEACHING METHODS *and* DISADVANTAGED, i.e., those documents in Areas D and G.

Or the searcher might ask for documents indexed by TEACHING METHODS *and* either DISADVANTAGED *or* SCIENCES. This would be those documents in Areas D, E, and G. If the searcher decided to look at documents indexed by TEACHING METHODS *and* SCIENCES, but *not* in the area of the DISADVANTAGED, this would be those in both A and B, but not in C, resulting in Area E only, excluding area G.

A search for items indexed by all three of the terms (TEACHING METHODS *and* DISADVANTAGED *and* SCIENCES) would be restricted to Area G.

All combinations above were specified using the Boolean logical operators AND, OR, NOT.

- AND indicates those things common to two or more groups.
- OR indicates those things in two or more groups, whether or not in common.
- NOT indicates those things not in a particular group or groups.

As can be seen, searching in this way quickly gets complicated and requires special assisting devices such as "double-dictionaries," Uniterm cards, or computers to help make the coordinations. Manual searching can conveniently coordinate only two terms.

3. Terminology in Coordinate Indexing

In discussing Coordinate Indexing, it is important to have available the standard terminology that has developed.

a. Pre-Coordinated Term

This is a concept that is prevalent enough in a given system to warrant representation by a single unique term rather than by terms representing its several components. For example, the ERIC system contains both the single terms TEACHERS and ATTITUDES. The concept "Teacher Attitudes" could be represented by the assignment of these two separate terms. However, this concept appears frequently enough and is searched frequently enough to warrant pre-coordinating the terms (that is, at indexing time, prior to searching) into the single useful index access point TEACHER ATTITUDES. The ERIC system pre-coordinates terms both on the basis of utility, as indicated above, and in order to have maximally useful terms appearing in its printed indexes, which are manually searched.

(Please note that a complex concept, represented by a multi-word pre-coordinated term, can still itself be post-coordinated at search time to form an even more complex concept, e.g. INSERVICE TEACHER EDUCATION *and* COMPUTER ASSISTED INSTRUCTION.)

b. Post-Coordination

This refers to the action, after (or post) the indexing process, of coordinating two or more terms to make up the desired concept. For example, rather than develop the distinct concept "Italian Speakers" or "Italian Speaking" into a single pre-coordinated term, it might be decided to rely on post-coordination of the two separate terms ITALIAN and NATIVE SPEAKERS.

c. Posting

Posting means to record. A document accession number can be "posted" to a list of similar numbers that have all been indexed by the same term. An index term can, in turn, be "posted" along with other such terms, to a document record. The first usage is the most common; the accession numbers are sometimes referred to as "postings."

d. False Drops

In a coordinate indexing system, terms are often assigned to a document that can go together, but are not meant to. A retrieval based on such an unintended coordination is called a "false drop." For example, a document could be indexed by the terms ACTIVISM, STUDENTS, and TEACHERS. The document dealt with "student activism," but a search aimed at "teacher activism" might retrieve it as a "false drop."

e. Roles and Links

These devices to improve retrieval results are not used in the ERIC system.

- "Roles" refer to additional information attached to index terms to designate the functional sense in which they are used. For example, an extra tag could be added to terms to identify those that refer to elements of the curriculum (as distinct, say, from areas of research).

- "Links" refer to methods of indicating which Descriptors assigned to a document may legitimately be coordinated. Descriptors from the same area of the document are given some similar additional tag. The process is very like the standard library practice of "analyzing out" selected distinct sections of a larger work, treating them as if they were documents in themselves.

D. Indexing for ERIC—Purpose and Approach

The purpose of indexing for ERIC is to provide subject access to the documents announced in RIE and to the articles announced in CIJE. The indexer, or abstractor/indexer, examines the document, chooses the concepts to be indexed, and translates these concepts into the indexing terminology of the system. In the ERIC system, a modified coordinate indexing approach is used and the controlled vocabulary or authority list containing the index terms that may be used is the *Thesaurus of ERIC Descriptors*. The *Thesaurus* lists all terms that can be used by the indexer, together with a display of terms that are Broader, Narrower, or Related to the given term. Cross-references are made from Synonyms, or other terms not to be used, to authorized index terms.

A detailed description of the role and function of the *Thesaurus*, and a bibliography of closely related lexicographic materials, are usually included in the published edition of the *Thesaurus*.

E. ERIC's Modified Coordinate Approach

An indexer in the ERIC system must have two distinct objectives:

- In-depth extraction of all significant concepts in the document so that the machine-readable data base will be manipulatable by these tags and searchers using machines can therefore access them;

- Selective identification of the major concepts in the document for use in preparing printed indexes to the announcement journal and for subsequent manual searching (as well as machine searching).

The in-depth indexing may safely use any term in the authority list. The selective indexing for the benefit of the printed index, however, must keep in mind that manual searching is limited in its ability to coordinate several terms. Therefore, the terms selected to represent the major concepts of the document should in general be at a level of specificity that will be useful to the user. For example, use of the specific single term COUNSELOR TRAINING would be preferable to use of the two broad terms COUNSELORS and TRAINING, and would save the manual user considerable work. The selective indexing is also limited in the number of terms that it can assign due to physical and economic limits on the size of the printed indexes, thereby also arguing for care in finding the specific, perhaps precoordinated, term, rather than several less well targeted terms.

F. Nature of the Educational Literature

Virtually anything can be taught. The field of education, therefore, comprises many subjects and is often dependent on or derived from work that is basically in other disciplines. The literature of education takes many forms. ERIC deals with all significant educational documents regardless of format, e.g.:

- research reports;
- journal articles;
- speeches;
- papers presented at meetings;
- state-of-the-art surveys;
- statistical compilations;
- teacher guides;
- reviews;
- government hearings and legislation;
- curriculum materials;
- bibliographies;
- newsletters, etc.

The methods of inquiry used in these various formats range from the empirical to the philosophically discursive. What controls selection (see Section III) is overall quality and the judgment as to whether the item would be of interest and value to others.

The literature collected, announced, and indexed by ERIC exhibits perhaps more variability than that of any other information system. A laboratory study on the nature of long-term memory, or a dissertation on the educational philosophy of John Dewey, may be announced on the same page as a guide to kindergarten teachers on using finger paints. The literature of education is multifaceted in nearly every sense:

- its topics;
- its approaches and methods;
- its formats;
- the users for whom the literature is intended.

G. Educational Community User Groups

The users of any information system may be divided into two main groups:

1. *Internal Users* of the System
(information specialists, librarians, document processors, etc., employed by components of the system)

The "internal" users tap the ERIC file in response to a variety of needs:

- telephone and correspondence inquiries;
- searching and preparing bibliographies for clients;
- preparing information analysis products (IAP's) and other publications.

Working in basically the same environment as the indexers, it is relatively easy for the internal users of the system to provide feedback to the indexers (at their own Clearinghouse and at others also) as to access points that are needed and that the indexer should provide whenever relevant. It is common within the ERIC system for each Clearinghouse to have its own list of "most frequently used index terms," which the indexer makes use of specifically to meet internal information needs.

2. *External Users* of the System
(researchers, scholars, teachers, lay people, etc. in the field)

The "external" users are a heterogeneous group ranging across a broad spectrum from:

- the generalist to the specialist;
- the trained member of the educational community to the untrained lay public;
- the ultra-sophisticated basic researcher to the applied sector occupied by administrators, teachers, legislators, etc.

Indexers must keep in mind these various groups and not slant their indexing solely toward one class or level of user. ERIC indexing must satisfy the needs of all of the above, striking a balance between over-indexing, which can create "red-herrings" for searchers, and under-indexing, which can effectively hide a document from potential users.

Feedback from external users to indexers is often difficult to obtain, but can be extremely valuable as an indicator both of access points needed by the field and new index terms that should be added to the *Thesaurus*.

H. Indexing Tools

There are several publications which are either necessary or very helpful for the indexer to consult during the indexing process:

1. *Thesaurus of ERIC Descriptors*

All Descriptors used by an indexer must either be in or have been proposed for inclusion in, the *Thesaurus of ERIC Descriptors*. The *Thesaurus* is the major reference used by the indexer in translating the concepts found in the document into terminology acceptable by the system.

The *Thesaurus* is an authority list mechanism which provides control over the indexing vocabulary and helps to ensure consistent use of terms throughout the system. The *Thesaurus* lists all terms which have been formally accepted by the system. Terms which are ambiguous or unusual are provided with definitions/Scope Notes. Cross-references are made from synonyms, or terms not to be used, to the approved word forms. Most main terms carry class membership (generic relationships) information in the form of terms thought to be "Broader" and terms thought to be "Narrower" than the given term. Other types of relationships are noted via the display of "Related" terms.

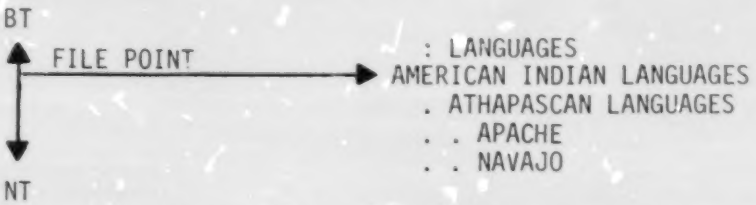
The *Thesaurus* serves both the indexer and the searcher. It brings to the attention of the indexer those terms which might be employed in making a search for the document and it brings to the attention of the searcher those terms which might have been employed by the indexer in describing documents pertinent to the searcher's question. The structured nature of the vocabulary is intended to guide both sets of users towards similar conclusions and actions. A thorough knowledge of and familiarity with the *Thesaurus* is required of all indexers.

The data presented in the *Thesaurus* is available in four formats, each providing the indexer with a different way of entering the *Thesaurus* and moving through it to find the exact terms to use in indexing.

- The Alphabetical Display presents all terms, including Synonyms, arranged alphabetically, together with definitions and complete cross-reference structure. This complete context makes it essential that this display be consulted by indexers before a final decision is made to use any particular Descriptor.
- The Rotated Display provides a permuted alphabetical index to all significant words that form Descriptors in the *Thesaurus* (Synonyms included). In other words,

PASS FAIL GRADING appears under PASS, under FAIL, and under GRADING. This display is useful in determining all usages of a particular word in the *Thesaurus*, without respect to its position in a phrase or multiword Descriptor. It tends to group related terms whereas they may often be separated in the main alphabetic array, thus aiding indexers in performing a more complete search of the *Thesaurus*, search analysts in translating their inquiry into the language of the system, and subject analysts in structuring new Descriptors.

- The Hierarchical Display presents sets of generic tree structures showing, for every term in the *Thesaurus*, the trail of narrower terms below it and broader terms above it, each carried to the farthest extreme. Subordination (or class membership) is indicated via indentions as in the partial tree shown below:



"American Indian Languages" has above it the Broader Term "Languages" and immediately narrower to it the term "Athapascan Languages." "Apache" and "Navajo" are in turn Narrower Terms to "Athapascan Languages."

The Hierarchical Display can be useful to the indexer in finding the most appropriate level of specificity to which to index a document.

- The Descriptor Group Display arranges each of the Descriptors in the *Thesaurus* into one (and only one) of several broad categories, e.g. "Equipment." The display shows each of these categories together with alphabetic arrays of the terms that have been assigned to each. The display is provided for browsing and rapid scanning of large numbers of Descriptors that may be of interest within a broad area. It is meant to provide suggestions and to be of general assistance to those using the *Thesaurus* for indexing, searching, and the structuring of new Descriptors. It is not a formal classification scheme. Each Group is defined by a Scope Note and is represented by a code number.

2. *Resources in Education* and *Current Index to Journals in Education*

Prior issues of the announcement journals themselves can be useful:

- in determining how particular terms have been used in the past, i.e., what kinds of documents have they been applied to;

- in determining how documents in a particular series have been indexed in the past.

It is helpful to the users if documents in the same series are given a consistent indexing treatment and can be relied on to be retrievable via the same terms if they deal with the same subject.

3. *Descriptor and Identifier Usage Report* *

This report provides a complete record of the usage of each index term (both Descriptors and Identifiers) through the last complete year. There is an alphabetic array of every index term that has been used, together with a complete list of all accession numbers that have been indexed by the term, and including a count of how many accessions are listed.

This document can be used as a comprehensive cumulative subject index for the entire file to date (without titles), but the indexer is more likely to use it to determine how many times a term has been used or whether two particular terms have both been used to index the same documents with any frequency:

- a very heavily used term may lead the indexer to feel that it lacks discrimination in the system; the indexer may proceed to use the term, but may (as a result of the research into usage) employ additional terms to attempt to "zero in" on the subject matter better;

- a very lightly posted term, or one posted years ago but not used since, may lead the indexer to question the "currency" of the term and whether it is now much used by either authors or searchers.

4. *ERIC Clearinghouse Scope of Interest Guide* (Appendix A)

The *ERIC Clearinghouse Scope of Interest Guide* provides a complete description of each Clearinghouse's area of coverage. It also presents, in its full form, lists, or mini-thesauri, of those Descriptors most frequently used by each Clearinghouse.

Inevitably some documents overlap between Clearinghouses. Often the Clearinghouse doing the processing of such a document can gain insight as to how the other Clearinghouse(s) would have indexed the document had it been assigned to them. Examination of this tool can prevent a narrow or parochial indexing approach and can lead to indexing from several potentially useful viewpoints, rather than just that of the particular Clearinghouse in possession of the document.

*Issued over time by various organizations and in various formats. Currently issued by EDRS on microfiche.

5. *Identifier Authority List*

The *Identifier Authority List* is a complete alphabetical list of all approved Identifiers. The first edition contained 25,242 approved terms used through April 1976. Semiannual editions are projected.

ERIC indexers should consult the *Identifier Authority List* (IAL) before adding terms to the Identifier fields of RIE and CIJE. In addition to the normal word order position, inverted formats and other possible variations should be checked before creating a new Identifier. If a term is not found in the IAL, the indexer should observe the guidelines and standards for establishing Identifier name forms (see Section VIII).

6. Other Reference Sources

Dictionaries, encyclopedias, glossaries, handbooks, and major textbooks can all aid the indexer in translating the language of a given document into usable index terms. The jargon of specialized fields must be avoided in favor of terms more widely and authoritatively accepted. Terms having different meanings in different fields must not be confused with one another.

Reference works of particular value in researching terminology are listed in the bibliography usually accompanying the printed edition of the *Thesaurus of ERIC Descriptors*. Reference works of particular value in researching Identifiers (place names, project names, test names, etc.) are listed in Section VIII of this Manual.

Records of specific indexing decisions, made at Clearinghouses in problem cases, should be kept for future reference by subsequent indexers at that installation.

I. INDEXING PROCESS

1. General

Indexing begins with the examination of the document. Both indexing and abstracting for the ERIC system should be based on the *entire* document. Nevertheless, working indexers know that certain sections of documents yield useful information more readily than others. Knowing where to look and to concentrate one's attention can be important to capturing the essence of a document in the allotted time.

Index the document in hand, not the document the writer *would like* to have written or *intends* to write the next time. Do not confuse speculation, or referrals to implications and possibilities, with real content.

The indexer should attempt to capture all significant concepts treated in the document. This is called indexing *in-depth* or *exhaustive* indexing. The indexer should index concepts at the generic/specific level actually covered by the document, i.e., index as generically as necessary, but as specifically as possible. For example, if the document concerns itself solely with the Navajo language, index to NAVAJO; do not index to the "higher" or more general levels LANGUAGES or AMERICAN INDIAN LANGUAGES.

Consistency is important in indexing, both among more than one indexer or within the performance of a single indexer (self-consistency). Such consistency, however, is difficult to attain. Indexers should always:

- proceed by rule, rather than by subjective decision;
- be aware that specific entities (such as geographic locations, project names, test names, individuals, etc.) though not in the *Thesaurus* are, nevertheless, indexable via the Identifier field.

A full discussion of the different types of Identifiers and how to structure such terms is provided in Section VIII.

All concepts selected as significant in the document must be translated into either existing (or proposed) Descriptors and Identifiers. Use the *Thesaurus* or *Identifier Authority List* to do this. Do not attempt to proceed on the basis of memory. A minor discrepancy in the spelling or ending of a Descriptor will lead to its later rejection by the computer system as invalid. For example:

ACCEPTABLE: AMERICAN INDIAN LANGUAGES

INVALID: AMERICAN INDIAN LANGUAGE

The same type of minor difference in an Identifier will not cause it to be rejected, but will lead to "scattering." (Scattering occurs when multiple versions of the same basic term appear on the file and in the indexes.) Scattering causes problems during retrieval and must be minimized. For example, if a searcher wanted to find instances where the UNIVERSITY OF CALIFORNIA, LOS ANGELES was the subject of a document, all possible variations of that term that indexers might have employed would have to be searched, if the file contained a lot of "scatter," e.g.:

CALIFORNIA UNIVERSITY AT LOS ANGELES
CALIFORNIA UNIVERSITY (LOS ANGELES)
CALIFORNIA, UNIVERSITY OF (LOS ANGELES)
UCLA
UNIVERSITY OF CALIFORNIA (LOS ANGELES)
UNIVERSITY OF CALIFORNIA AT LOS ANGELES
UNIVERSITY OF CALIFORNIA IN LOS ANGELES
UNIVERSITY OF CALIFORNIA LOS ANGELES

An indexer must decide which concepts in a document are to be considered "MAJOR" and which "MINOR." This is done in order to restrict the size of the printed subject indexes and is also useful later in machine searching in those instances where relevance is more important than recall. MAJOR concepts, whether expressed as Descriptors or as Identifiers, must be asterisked (*). For example:

USED AS MAJOR TERMS	USED AS MINOR TERMS
*FAMILY PLANNING	FAMILY PLANNING
*CONTRACEPTION	CONTRACEPTION

The purpose of indexing is to make a document retrievable. At all times the indexer should evaluate the concepts being selected in terms of a hypothetical searcher:

- Would a searcher after a particular concept be satisfied to retrieve this document?
- Would the searcher be disappointed at the amount of information the document contained on the indexed concept?

Indexing is often described as being both a science and an art. It is scientific in that experimentation and practice over the years have derived good and consistent results. It is an art, however, in that as long as it is done by a human being it remains an expression of the individual judgment of the indexer and is not subject to rigorous consistency and exact results. The guidelines that follow do not and cannot always involve hard and fast rules. They provide indexers with a foundation and a philosophy, but only long experience and practical judgment can develop an expert.

2. Examination of the Document

(Check *Abstractor/Indexer Workbook*, ED 207 614, for this Section)

The experienced indexer is familiar with the information system (documents, vocabulary, users, etc.) and in the examination of documents has learned to focus attention efficiently in several ways, thereby permitting perhaps as few as one or two passes through the document for its evaluation and analysis. The inexperienced indexer, on the other hand, typically requires several passes through the document and engages in extensive paging back and forth.

The indexer should first concentrate on building a basic frame of reference for a given document:

- the document's source (personal author, corporate author, and sponsoring organization);
- its publication date and timeliness;
- its format and general organization;
- its relationship to the entire system, and its potential audience.

The indexer should come away from this brief step with a good idea of who did it, when, why, for whom, who paid, why it was selected, who might be interested, magnitude, etc.

The next step is to inventory and analyze the physical and organizational content of the document. Be aware that content varies greatly among documents.

- Title;
- Abstract;
- Introduction/Preface/Foreword (which may include historical and theoretical background);
- Description of methodology, experimental design, objectives, materials used;
- Work performed;
- Discussion;
- Results;
- Illustrative material (graphs, charts, photographs, tables, diagrams);
- Conclusions;
- Summary;
- Recommendations for further work;
- References;
- Appendixes;
- Indexes.

With this information in hand, the indexer can then proceed to a more detailed analysis of the document's subject content. This is usually done in a more selective journalistic sequence, concentrating on those sections revealed by the inventory above to be most information-bearing. The indexer should attempt to verify his or her interpretation of each section against following sections. For example, the Title should be compared with the Abstract, the Abstract with the Summary, and so on, until a clear, verifiable, supportable picture of what the document is really about emerges.

The relationship between the indexing process and the abstracting process should be noted here. The individual who abstracts a particular document inevitably absorbs much information regarding that document. This information may be utilized in the indexing

process. This is particularly easy if the abstractor and the indexer are one and the same person. Indexing terms may be noted marginally or mentally during abstracting for later use (by oneself or others). If the abstractor and indexer are the same person, then the learning-about-the-document process required to perform the one function overlaps with that required for the other function, thereby saving time overall. If the abstractor and indexer are separate individuals, then inevitably both must go through the same learning process, resulting in less efficient staff utilization.

Whether the abstract is author-provided or written or modified by an ERIC abstractor, it is a good idea to see that as many of the indexed concepts as possible appear in the abstract. This provides the user with a reassuring explanation as to why a particular index term was used. In cases where there is no apparent or obvious connection between an index term assigned and the rest of the document description, the user is left puzzled as to whether the item is relevant to his or her needs.

The advent of search systems capable of searching on the full text of a bibliographic record does not really change this advice. The manual use of the records, and their search via systems without full text capability, will exceed for some time to come the volume of full text search activity. Even with a full text capability, it is useful to the user for the record to contain explicitly the information that validates it as an output for a given search.

3. Identification of Indexable Information

A primary rule is to index the document in hand. This rule may sound obvious, but it is easy to be trapped into indexing the implications, applications, projected uses, future directions, etc., of some documents rather than their actual content. This is a pitfall and should be avoided. For example, a bibliography of basic texts in adult education may have been originally compiled to support graduate study in adult education. Nevertheless, GRADUATE STUDY is not the subject matter of the document, but only one of the many possible applications. It should not be selected as an indexable concept.

Negative results can be as indexable as positive results, and as important to the user. For example, a research study may tend to disprove the hypothesis that participation in planning the educational program increases the student's desire to do well academically. The concept ACADEMIC ASPIRATION is definitely indexable insofar as it is one of the primary ideas (in this case a "dependent variable") that the research is investigating.

The indexer must always keep in mind that it is *concepts* that are being indexed, not merely the author's words in which the concept is expressed. An author may choose to use excessively exotic, obscure, specialialized, mis-interpreted, colloquial, or otherwise unacceptable language. Do not engage in mere "word indexing." Isolate the concept and meaning behind the words and then choose the words

the system has designated for the concept. (Of course, insofar as it is possible to use the language and terminology of the author and still observe this admonition, then the best of both worlds is served.)

For example, an author may use the term VOCATIONAL EDUCATION in discussing training programs that attempt to make adults employable by providing them with basic skills in reading, writing, and arithmetic. The *Thesaurus of ERIC Descriptors* defines this term, however, in a way that is at variance with this author's usage, as follows:

> *VOCATIONAL EDUCATION:*
>
> *Formal preparation for semiskilled, skilled, technical, or paraprofessional occupations usually below the baccalaureate degree.*

Examination reveals that the concept the author is really discussing is represented in ERIC by the Descriptor ADULT BASIC EDUCATION, which is defined in the *Thesaurus* as follows:

> *ADULT BASIC EDUCATION:*
>
> *Education provided for adults at the elementary level, usually with emphasis on communicative, computational, and social skills.*

As can be seen from the above, it should be kept in mind that authors do not necessarily use words precisely and that it is up to the information system to impose its own terminological order on a literature that speaks from many different viewpoints.

Mere mention of any concept within a document does not mean that it is indexable information. If the concept was the reason for the document to be written, or, if without the concept the document would not exist or would be altered significantly, then the concept is indexable information. The indexer should assume the posture of a skeptic who has to be convinced by good evidence of the appropriateness and applicability of any given concept.

To ensure comprehensive and uniform treatment of documents, indexers should always refer to a check list of indexable elements. The use of this check list will help guarantee reasonable exhaustivity in indexing. Documents entering the ERIC system usually contain the following elements of information, which are treated individually in detail immediately following this list:

- Population Concepts
  - —Educational (i.e., Grade/Academic) Level
  - —Age Level
  - —Other Groupings, e.g., ethnic groups, religions, etc.

- Activities/Action Concepts; Methodology/Materials Concepts
- Curriculum Concepts
- Document Form/Type
- Identifiers

a. Population Concepts

Population concepts categorize and identify the group or individual studied by the document or intended as the users of the document. Most important to ERIC users are terms identifying the population's:

- Educational (Grade/Academic) Level;
- Age Level.

However, other categories which may be applicable are:

- Occupation;
- Race or Nationality;
- Religion;
- Intelligence or Ability Level;
- Physical or Emotional Characteristics;
- Socioeconomic Characteristics;
- Sex.

Educational Level must be indexed when appropriate (i.e., when dealt with by documents or journal articles). Age Level should be indexed for materials concerned strictly with age-level populations. Detailed instructions on use of these Levelers follow below. All other population concepts are treated just as any other concepts, and their use is up to the discretion of the indexer.

Examples of some terms in the *Thesaurus* which represent these various population concepts follow:

- Occupation - e.g.,

  ACCOUNTANTS
  COOKS
  COUNSELORS
  LIBRARIANS
  MEDICAL LABORATORY ASSISTANTS
  OPTOMETRISTS
  TEACHERS

  Note: See also list of Narrower Terms under term OCCUPATIONS, and Descriptor Group "OCCUPATIONS."

- Race/Nationality - e.g.,

AMERICAN INDIANS	JAPANESE AMERICANS
ARABS	KOREAN AMERICANS
BLACKS	LATIN AMERICANS
CHINESE AMERICANS	MEXICAN AMERICANS
CUBANS	MEXICANS
ESKIMOS	NORTH AMERICANS
FILIPINO AMERICANS	POLISH AMERICANS
HISPANIC AMERICANS	PUERTO RICANS
INDIANS	SPANISH AMERICANS
ITALIAN AMERICANS	WHITES

- Religion - e.g.,

AMISH	JEWS
CATHOLICS	JUDAISM
CHRISTIANITY	PROTESTANTS
ISLAMIC CULTURE	PURITANS

- Intelligence/Ability Level - e.g.,

ACADEMICALLY GIFTED	ILLITERACY
DEVELOPMENTAL DISABILITIES	MENTAL RETARDATION
HIGH ACHIEVEMENT	SLOW LEARNERS
LEARNING DISABILITIES	TALENT

- Physical/Emotional Characteristics - e.g.,

AMPUTATIONS	HYPERACTIVITY
BLINDNESS	MENTAL DISORDERS
DEAFNESS	NEUROLOGICAL IMPAIRMENTS
DEAF BLIND	PARANOID BEHAVIOR
DOWNS SYNDROME	PERCEPTUAL HANDICAPS
DRUG ADDICTION	PHYSICAL DISABILITIES
EMOTIONAL DISTURBANCES	PSYCHOSIS
HOSTILITY	SCHIZOPHRENIA

- Socioeconomic Characteristics - e.g.,

ADOPTED CHILDREN	FOSTER CHILDREN
ADVANTAGED	MIGRANTS
CRIMINALS	NOMADS
DELINQUENCY	PRISONERS
ECONOMICALLY DISADVANTAGED	REFUGEES
EDUCATIONALLY DISADVANTAGED	

- Sex - e.g.,

EMPLOYED WOMEN	MALES
FATHERS	MOTHERS
FEMALES	

(1) Educational (Grade/Academic) Level

Many Descriptors in the ERIC *Thesaurus* can be used to identify the educational level being studied or the educational level toward which a document or article is directed. (See Figure VII-1 for a relatively complete list.)

Any of the terms appearing in Figure VII-1 may be used to index a document to the specific educational level with which it deals. Because of the extreme importance of this particular indexing to the retrieval process, however, and because of the large number of terms available to the indexer, a special attempt is made, with the following guidelines, to reduce "scattering."

Fourteen (14) broad Descriptors in this group have been specially identified or defined as subsuming several of the more specific terms. These broad Descriptors and their definitions appear in Figure VII-2. One or more of these special Descriptors must *always* be used to index educational level *when the document deals with such levels.* To assure assigning of an educational level Descriptor when appropriate, indexers are encouraged to select the educational level term first, before further indexing.

An educational level term of major or minor status should be on every document except in cases of:

- Documents where educational level is incidental and not specifically treated.
- Documents that apply to any or all educational levels equally.

The educational level term should be majored only when the central focus of the document is on the subject of that educational level. (See discussion of Major/Minor terms in Section VII.I.5.b.)

An occasional document will need to carry multiple educational levelers. For example, a document on Catholic schools having considerable statistical data for both K-12 schools and institutions of higher education should be indexed by ELEMENTARY SECONDARY EDUCATION and HIGHER EDUCATION. For the vast majority of documents, however, it is appropriate to assign only one educational leveler.

Note that there is a "broader-narrower" relationship between some of the 14 broad level Descriptors (not corresponding exactly to the strict hierarchical relationships of the ERIC *Thesaurus*). The use of a narrower term would, of course, obviate the need to also use its broader term, and vice versa. For example, a document indexed by PRESCHOOL EDUCATION need not also be indexed by EARLY CHILDHOOD EDUCATION. (See discussion on indexing specificity in Section VII.I.5.a.)

ADULT BASIC EDUCATION
ADULT EDUCATION
ADULT PROGRAMS
COLLEGE BOUND STUDENTS
COLLEGE CURRICULUM
COLLEGE FRESHMEN
COLLEGE GRADUATES
COLLEGE INSTRUCTION
COLLEGE PREPARATION
COLLEGE PROGRAMS
COLLEGE SENIORS
COLLEGE STUDENTS
COLLEGES
COMMUNITY COLLEGES
DOCTORAL PROGRAMS
EARLY CHILDHOOD EDUCATION
ELEMENTARY EDUCATION
ELEMENTARY SCHOOL CURRICULUM
ELEMENTARY SCHOOL STUDENTS
ELEMENTARY SCHOOLS
ELEMENTARY SECONDARY EDUCATION
EXTERNAL DEGREE PROGRAMS
GRADE 1
GRADE 2
GRADE 3
GRADE 4
GRADE 5
GRADE 6
GRADE 7
GRADE 8
GRADE 9
GRADE 10
GRADE 11
GRADE 12
GRADUATE STUDENTS
GRADUATE STUDY
HIGH SCHOOL EQUIVALENCY PROGRAMS
HIGH SCHOOL FRESHMEN
HIGH SCHOOL GRADUATES
HIGH SCHOOL SENIORS
HIGH SCHOOL STUDENTS
HIGH SCHOOLS
HIGHER EDUCATION
INSERVICE EDUCATION
INTERMEDIATE GRADES
JUNIOR HIGH SCHOOL STUDENTS
JUNIOR HIGH SCHOOLS
KINDERGARTEN
KINDERGARTEN CHILDREN
MASTERS PROGRAMS
MIDDLE SCHOOLS (= Grades 4-9 or some segment thereof)
NONCOLLEGE BOUND STUDENTS
NURSERY SCHOOLS
POSTDOCTORAL EDUCATION
POSTSECONDARY EDUCATION
PRESCHOOL CHILDREN
PRESCHOOL CURRICULUM
PRESCHOOL EDUCATION
PRIMARY EDUCATION
PROFESSIONAL EDUCATION
SECONDARY EDUCATION
SECONDARY SCHOOL CURRICULUM
SECONDARY SCHOOL STUDENTS
SECONDARY SCHOOLS
SPECIAL DEGREE PROGRAMS
TWO YEAR COLLEGE STUDENTS
TWO YEAR COLLEGES
UNDERGRADUATE STUDENTS
UNDERGRADUATE STUDY
UNIVERSITIES
UPPER DIVISION COLLEGES

FIGURE VII-1: EDUCATIONAL LEVEL DESCRIPTORS—COMPLETE LIST

- EARLY CHILDHOOD EDUCATION
  Scope Note: Activities and/or experiences that are intended to effect developmental changes in children, from birth through the primary units of elementary school (grades K–3).
  - PRESCHOOL EDUCATION
    Scope Note: Activities and/or experiences that are intended to effect developmental changes in children, from birth to entrance in kindergarten (or grade 1 when kindergarten is not attended).
  - PRIMARY EDUCATION
    Scope Note: Education provided in kindergarten through grade 3.
- ELEMENTARY SECONDARY EDUCATION
  Scope Note: Formal education provided in kindergarten or grade 1 through grade 12.
  - ELEMENTARY EDUCATION
    Scope Note: Education provided in kindergarten or grade 1 through grade 6, 7, or 8.
    - ADULT BASIC EDUCATION
      Scope Note: Education provided for adults at the elementary level (through grade 8), usually with emphasis on communicative, computational, and social skills.
    - PRIMARY EDUCATION
      Scope Note: (See above.)
    - INTERMEDIATE GRADES
      Scope Note: Includes the middle and/or upper elementary grades, but usually 4, 5, and 6.
  - SECONDARY EDUCATION
    Scope Note: Education provided in grade 7, 8, or 9 through grade 12.
    - JUNIOR HIGH SCHOOLS
      Scope Note: Education provided in grades 7, 8, and 9—less commonly 7 and 8, or 8 and 9.
    - HIGH SCHOOLS (Changed from "Senior High Schools" in March 1980.)
      Scope Note: Providing formal education in grades 9 or 10 through 12.
    - HIGH SCHOOL EQUIVALENCY PROGRAMS
      Scope Note: Adult educational activities concerned with the preparation for and the taking of tests which lead to a high school equivalency certificate, e.g., General Educational Development program.
- POSTSECONDARY EDUCATION
  Scope Note: All education beyond the secondary level—includes learning activities and experiences beyond the compulsory school attendance age, with the exception of adult basic education and high school equivalency programs. (Before APR75, restricted to "education beyond grade 12 and less than the baccalaureate level.")
  - HIGHER EDUCATION
    Scope Note: All education beyond the secondary level leading to a formal degree.
  - TWO YEAR COLLEGES (Changed from "Junior Colleges" in March 1980.)
    Scope Note: Public or private postsecondary institutions providing at least 2, but less than 4, years of academic and/or occupational education.

FIGURE VII-2: **MANDATORY "EDUCATIONAL LEVEL" DESCRIPTORS**

(Procedure implemented February 1975)

Other Descriptors, which may be similar in form and meaning to any of the 14 broad level Descriptors, should not be used as educational level descriptors *per se*. They may, however, be fully used for other indexing applications. For example:

MANDATORY TERMS FOR INDEXING EDUCATIONAL LEVEL	CLOSELY RELATED TERMS
PRESCHOOL EDUCATION	PRESCHOOL CURRICULUM
ELEMENTARY EDUCATION	ELEMENTARY SCHOOLS
JUNIOR HIGH SCHOOLS	JUNIOR HIGH SCHOOL STUDENTS

Chronological age may often be used in determining the educational level of a population group. For instance, if 5-9 year olds represent the target population of a study, the indexer can assume (unless the document or article describing the study indicates otherwise) that the educational level is "grades K-3" or PRIMARY EDUCATION.

NOTE: There are cases where grade and age level correspondence would not hold true:

- mentally handicapped persons whose chronological ages and mental ages do not match.
- gifted persons whose mental age is above their normal age-grade placement.
- persons of compulsory school age who have been excused from attending school.

Hopefully, the educational level of these groups would be specified in the document or article because the indexer could not assume educational level strictly on the basis of age level. In most instances, however, age level may be used to determine educational level. (See conversion list displayed in Figure VII-3.)

Grade level ranges may also, like age, be used to determine the appropriate educational level Descriptor to use. (See Figure VII-4.)

The indexer should not confuse the intermediate or middle grades with the so-called "middle school level." The concept "middle school" has never been standardized and should not be used as an educational level term. Usually thought of as a replacement for the junior high school level, the most commonly agreed-upon "middle-school" grade-level ranges are:

- 7-8 and
- 6-8,

CHRONOLOGICAL AGE	CORRESPONDING BROAD EDUCATIONAL LEVEL DESCRIPTOR
0-9	EARLY CHILDHOOD EDUCATION
0-5,6	PRESCHOOL EDUCATION
5-9	PRIMARY EDUCATION
5-12,13,14	ELEMENTARY EDUCATION
5-18	ELEMENTARY SECONDARY EDUCATION
9-12,13,14	INTERMEDIATE GRADES
12,13,14-18	SECONDARY EDUCATION
12-15	JUNIOR HIGH SCHOOLS
14,15-18	HIGH SCHOOLS
Adult	ADULT BASIC EDUCATION
Adult	HIGH SCHOOL EQUIVALENCY PROGRAMS
Adult	POSTSECONDARY EDUCATION
Adult	HIGHER EDUCATION
Adult	TWO YEAR COLLEGES

FIGURE VII-3: CHRONOLOGICAL AGE TO EDUCATIONAL LEVEL CROSS-REFERENCE TABLE

GRADE LEVEL	CORRESPONDING BROAD EDUCATIONAL LEVEL DESCRIPTOR
K-12	ELEMENTARY SECONDARY EDUCATION
K-8, 1-6, 1-8	ELEMENTARY EDUCATION
1-3	PRIMARY EDUATION
4-6, 5-8	INTERMEDIATE GRADES
6-8, 7-8, 7-9, 7-10	JUNIOR HIGH SCHOOLS
9-12, 10-12	HIGH SCHOOLS
*13-14, 14-16, 15-16	HIGHER EDUCATION

*When appropriate, use TWO YEAR COLLEGES for grade level range 13-14.

FIGURE VII-4: GRADE LEVEL TO EDUCATIONAL LEVEL CROSS-REFERENCE TABLE

but other possible ranges include:

- 4-7,
- 5-8,
- 5-9, and
- 7-9.

Thus, the Descriptor MIDDLE SCHOOLS should be used as an index term only when the document or article itself uses it, and only with an appropriate educational level Descriptor.

It is worth noting that the term ADULT EDUCATION was not included in the list of broad educational level Descriptors precisely because it does not discriminate this factor; it may overlap the elementary (adult basic), secondary (high school equivalency), and postsecondary levels. Documents on "lifelong" and/or "adult" education (excluding the educational leveler ADULT BASIC EDUCATION) do not necessarily require an educational level Descriptor. It is assumed that such documents would be indexed by LIFELONG LEARNING, ADULT EDUCATION, or a narrower term in the ADULT EDUCATION hierarchy.

The following examples are intended to show some typical situations that the indexer might face in indexing by educational level..

- Example 1:

  A document on *Enrollment Patterns at Prince George's Community College* might be indexed:

  DESCRIPTORS: ASSOCIATE DEGREES; *COMMUNITY COLLEGES; ENROLLMENT; ENROLLMENT RATE; *ENROLLMENT TRENDS; TWO YEAR COLLEGES; *TWO YEAR COLLEGE STUDENTS; ETC.

  IDENTIFIERS: PRINCE GEORGES COMMUNITY COLLEGE MD; ETC.

  Prince George's Community College is a 2-year institution with terminal occupational and bachelor's creditable programs. COMMUNITY COLLEGES should be included as a major Descriptor because of its specificity, but accompanied by the leveling term TWO YEAR COLLEGES as a minor entry.

- Example 2:

  A document on *Teaching About Africa—Social Studies Activities for Seventh Graders* might be indexed:

  DESCRIPTORS: *AFRICAN CULTURE; *GRADE 7; JUNIOR HIGH SCHOOLS; *SOCIAL STUDIES; TEACHING METHODS; UNITS OF STUDY; ETC.

  IDENTIFIERS: *AFRICA, ETC.

The leveling term JUNIOR HIGH SCHOOLS is added as a minor Descriptor complementing the major and more specific Descriptor GRADE 7. Although overlapping between the general concepts of ELEMENTARY EDUCATION and SECONDARY EDUCATION, GRADE 7 (also GRADE 8) would normally be used with JUNIOR HIGH SCHOOLS, unless such indexing would mislead users.

- Example 3:

  An article on *Evaluation of Arithmetic Units in Grades 3, 5, and 7* might be indexed:

  DESCRIPTORS: *ARITHMETIC; *CURRICULUM EVALUATION; ELEMENTARY EDUCATION; *ELEMENTARY SCHOOL MATHEMATICS; GRADE 3; GRADE 5; GRADE 7; ETC.

  Although ELEMENTARY EDUCATION is included as the leveling term, ELEMENTARY SCHOOL MATHEMATICS is asterisked (made Major) because of its specificity. The specific grade terms are added as an indexing option; in this case, they are not asterisked, as the author of the article indicates general transferability of his conclusions to arithmetic units in grades 4 and 6.

- Example 4:

  A document on *Differential Diagnostic Evaluations of Aurally Handicapped Children in Grades K-6, With Emphasis on Kindergarten Children to Allow Major Corrective Measures Prior to Entry into First Grade* might be indexed:

  DESCRIPTORS: *AUDITORY EVALUATION; DIAGNOSTIC TESTS; ELEMENTARY EDUCATION; *ELEMENTARY SCHOOL STUDENTS; *HEARING IMPAIRMENTS; KINDERGARTEN CHILDREN; ETC.

  ELEMENTARY EDUCATION is the leveling term corresponding to grades K-6. ELEMENTARY SCHOOL STUDENTS is starred (made Major) because of its specificity. KINDERGARTEN CHILDREN is included as a minor term because of the particular emphasis at this level.

- Example 5:

  An article on *New Curriculums for Preparing Educational Administrators—Providing Leadership for the 1980-1985 Public Schools* might be indexed:

DESCRIPTORS: *ADMINISTRATOR EDUCATION; *CURRICULUM DEVELOPMENT; *EDUCATIONAL ADMINISTRATION; EDUCATIONAL NEEDS; ELEMENTARY SECONDARY EDUCATION; HIGHER EDUCATION; PUBLIC SCHOOLS; ETC.

Two leveling terms, HIGHER EDUCATION and ELEMENTARY SECONDARY EDUCATION are used. The former covers the level of training discussed in the article; the latter covers the educational level of the ultimate target group.

- Example 6:

A document on *Preparing Teachers, Students, and Citizens to Deal with the Problems and Potentialities of the Aged* might be indexed:

DESCRIPTORS: *GERONTOLOGY; POSTSECONDARY EDUCATION; ETC.

POSTSECONDARY EDUCATION sufficiently covers the educational level here. HIGHER EDUCATION would not be indexed unless the document covered training programs leading to a formal degree. ADULT EDUCATION is too broad and, therefore, not used.

Note the absence of the Descriptor OLDER ADULTS. The post-coordination of OLDER ADULTS and POSTSECONDARY EDUCATION would most likely be used for "education for, rather than about, 'older adults'," in which case, this document would be a false drop.

- Example 7:

A document on *Establishing a Language Laboratory to Teach English to Non-English Speaking, Inner City Youth to Help to Overcome Linguistic and Cultural Handicaps* might be indexed:

DESCRIPTORS: *DISADVANTAGED YOUTH; *ENGLISH (SECOND LANGUAGE); *LANGUAGE LABORATORIES; *NON ENGLISH SPEAKING; SECOND LANGUAGE INSTRUCTION; ETC.

Though designation of educational level might be applicable in this case, none could be indexed without further information.

- Example 8:

  An article on *The Influence of Teachers on Religious Beliefs and Moral Values* might be indexed:

  DESCRIPTORS: EDUCATIONAL OBJECTIVES; *MORAL VALUES; *RELIGION; RELIGIOUS EDUCATION; *STUDENT TEACHER RELATIONSHIP; TEACHER ATTITUDES; *TEACHER INFLUENCE; ETC.

  Educational level does not appear to be applicable in this case. The material appears to be open to all levels.

- Example 9:

  An article on *Government and Academia: The Federal Government's Increasing Role in Higher Education* might be indexed:

  DESCRIPTORS: ACADEMIC FREEDOM; COMPLIANCE (LEGAL); *FEDERAL REGULATION; GOVERNMENT ROLE; *GOVERNMENT SCHOOL RELATIONSHIP; *HIGHER EDUCATION; INSTITUTIONAL AUTONOMY; ETC.

  Here, unlike any of the preceding examples, the educational leveler is made a major Descriptor. HIGHER EDUCATION, in consideration of other related Descriptors, provides adequate precision in regard to this article's subject.

(2) Age Level

The ten Descriptors listed in Figure VII-5 are used to index age level in the ERIC system. Each covers a specific age range. One or more of these Descriptors should be posted to ERIC documents or journal articles concerned strictly with age-level groups or populations. However, the use of specific terms such as ADOPTED CHILDREN and ADULT DROPOUTS would obviate the need to also index generic terms such as CHILDREN and ADULTS.

Unlike educational levelers, age level Descriptors are not to be considered "mandatory." Appropriate mandatory educational levelers must always be considered first and be given precedence over age levelers. For instance: a document properly indexed with EARLY CHILDHOOD EDUCATION (mandatory educational leveler) would not usually carry the age leveler YOUNG CHILDREN, unless a subset of the total population with which the document is concerned

falls outside the scope of early childhood education. (In other words, the use of YOUNG CHILDREN would be appropriate if a part of the subject population is not adequately conveyed by the activities and experiences with which early childhood education is normally concerned.)

"AGE LEVEL" DESCRIPTORS
INFANTS Aged birth to 24 months. YOUNG CHILDREN Aged birth through 8 years. CHILDREN Aged birth through 12 years. PRESCHOOL CHILDREN Aged 2 through 5 years. PREADOLESCENTS Aged 9 through 12 years. ADOLESCENTS Aged 13 through 17 years. YOUNG ADULTS Aged 18 through 30 years. ADULTS Aged 18 years and over. MIDDLE AGED ADULTS Aged 45 through 64 years. OLDER ADULTS Aged 65 years and over.

FIGURE VII-5: "AGE LEVEL" DESCRIPTORS

b. Action Concepts and Materials Concepts

Activities or action concepts include such terms as:

- Instruction;
- Testing;
- Experiments, etc.

Methodology and materials concepts include such terms as:

- Language Laboratories;
- Objective Tests;
- Filmstrips, etc.

Often a decision must be made as to whether the document is about the activity, about the materials, or about both. (In certain instances, the activity and the methodology might be essentially the same.)

For example, if a document is about testing, making only slight mention of methods and specific tests, then it should be indexed by TESTING. However, do not use TESTING when more precise Descriptors are available (MINIMUM COMPETENCY TESTING, TESTING PROGRAMS, etc.).

If it is about the development or use of a specific kind of test (i.e., aptitude tests), then it should be indexed by APTITUDE TESTS, not by TESTING.

If, however, the document is about testing, and various aptitude tests were used, it should be indexed by TESTING (or a more precise "testing" term), by APTITUDE TESTS, and by the names of the specific aptitude tests for which data and results were presented.

c. Curriculum Concepts

This refers to the educational subject or concept that is being administered, taught, or measured. Examples are:

- Arithmetic;
- History;
- Learning Disabilities;
- Reading;
- Spatial Ability, etc.

Those concepts that are actively and substantially treated by the document are indexable. For example, if a teaching method is used for arithmetic and this is reported and described in detail, then the document should be indexed by ARITHMETIC, along with terms describing the method, the persons being taught, etc. However, if the document mentions that this method might also be used for teaching music, but does not describe this use of the method, then the document should not be indexed by MUSIC.

d. Document Form/Type

It is a valid indexing concern to wish to record and store the information describing whether a document is a textbook, curriculum guide, dissertation, or other well-known form. Use of such specific information can often aid retrieval. For example, a search for textbooks on mathematics for adults probably would not wish to retrieve documents dealing with textbook writing. The former can be indexed by TEXTBOOKS; the latter by TEXTBOOK PREPARATION.

Similarly, specific curriculum guides can be distinguished from the act of curriculum preparation by using the Descriptors CURRICULUM GUIDES and CURRICULUM DEVELOPMENT, respectively. Not all situations can be handled in this matter, and it may be necessary to rely on coordination of index terms to distinguish concepts.

From ERIC's beginning in 1966 through mid-1974, the only way to index by document/publication form or type was via Descriptors or Identifiers. In mid-1974 the "Publication Type" data element was added to the ERIC Resume Form, and catalogers began automatically tagging each and every accession with a code representing its form (see Figure VII-7).

With the inception of this new cataloging element (which is machine manipulable and can be searched or made to print out with each resume), it becomes necessary to coordinate the assignment of the PUBTYPE code with the assignment of Descriptors that can represent form.

Many Descriptors can be used for tagging publication types. A fairly comprehensive list appears in the cataloging rules pertaining to PUBTYPE and is repeated here as Figure VII-6. There are twenty (20) Descriptors that are not used for this purpose, however, because such use would essentially duplicate the coding of the PUBTYPE field. Each of these 20 terms carries the following note in the *Thesaurus*: "CORRESPONDS TO PUBTYPE CODE XXX—DO NOT USE EXCEPT AS THE SUBJECT OF A DOCUMENT." These 20 Descriptors and their corresponding PUBTYPE codes are listed in Figure VII-8.

All other Descriptors that represent form (e.g., DIARIES) should generally be used in indexing as minor Descriptors. Only when representing the subject of the document in hand should they be used as major Descriptors.

e. Identifiers

Frequently a part of a document's indexable information are:

- proper names of persons;
- geographic locations;
- proper names of organizations;
- projects, etc.

PUBLICATION TYPE	PUBTYPE CODE MOST APPLICABLE
Abstracts	131
Administrator Guides	055
Annotated Bibliographies	131
Annual Reports	141
Answer Keys	160
Answer Sheets	160
Anthologies	020
[Archival Documents]	080
Atlases	133
Audiodisc Recordings	100
Audiotape Recordings	100
* Audiovisual Aids	100
Autobiographies	080
* Bibliographies	131
Biographical Inventories	080 (132)
Biographies	080
[Booklists]	131
* Books	010
Book Reviews	070
Bulletins	022
[Bylaws]	090
Cartoons	100 (030)
Case Records	141 or 143 or 140
Case Studies	141 or 143 or 140
Catalogs	132
Charts	100
Check Lists	130 or 160
[Childrens Books]	010, 030
Childrens Literature	010, 030
Chronicles	080 (020)
Citation Indexes	131
[Class Newspapers]	022
[Classroom Games]	051 (100)
[Classroom Materials]	051 or 052
Codes of Ethics	090
Comics (Publications)	030
Computer Output Microfilm	100
Computer Programs	100
[Concordances]	134
* Conference Papers	150
* Conference Proceedings	021
[Conference Summaries]	021
Contracts	090
Course Descriptions	052 or 050 or 051
[Courtroom Transcripts]	080
[Creative Works]	030
Curriculum Guides	052 or 050 or 051
[Data Sheets]	110 or 130
Diagrams	100
Diaries	120 (080 or 030)
* Dictionaries	134
[Dictionary Catalogs]	131
* Directories	132
[Discipline Codes]	090
Discographies	131
* Doctoral Dissertations	041
Documentaries	100 (141)
Drama	030
Editorials	120
Encyclopedias	130
[ERIC IAPs]	071
Essays	120 or 030
[Evaluation Studies]	142
Facility Guidelines	055
Faculty Handbooks	055
Feasibility Studies	142

PUBLICATION TYPE	PUBTYPE CODE MOST APPLICABLE
Filmographies	131
Films	100
Filmstrips	100
Flow Charts	100
Foreign Language Books	010 (170)
Foreign Language Films	100 (170)
Foreign Language Periodicals	022 (170)
Games	999 or 051
Glossaries	134
Graphs	100
Guidelines	050 or 052 or 055
* Guides	050 or 051 or 052 or 055
Hearings	090
[Historical Reviews]	080
Illustrations	100
Indexes	130 or 131
[Information Analyses]	070 or 071
Instructional Materials	051
Interviews	120 or 160
Item Banks	160
[Journal Articles]	080
[Journals]	022
[Judicial Materials]	090
Kinescope Recordings	100
Laboratory Manuals	051
[Language Guides]	051 or 130 (170)
Large Type Materials	051
Leaders Guides	052
[Lecture]	150 (051)
[Legal Analysis]	090
Legislation	090
Lesson Plans	052
Letters (Correspondence)	030
[Literature Guides]	131
Literature Reviews	131 (070)
[Lobbying Papers]	090 and 120
Magnetic Tape Cassettes	100
Magnetic Tapes	100
[Manuals]	050 or 051 or 052 or 055
Maps	133
Master Plans	090
[Master Tapes (Audio)]	100
* Masters Theses	042
Matrices	100
Microforms	100
Models	100 or 143
[Musical Materials]	030
Negotiation Agreements	090
Newsletters	022
Newspapers	022
Nonprint Media	100
Opinions	120
[Oral History Transcripts]	080
Pamphlets	Document Dependent
[Parent Guides]	055
Patents	090
Periodicals	022
Permuted Indexes	130 or 131

PUBLICATION TYPE	PUBTYPE CODE MOST APPLICABLE
[Phonograph Records]	100
Photographs	100
Poetry	030
Position Papers	120
* Practicum Papers	043
Program Descriptions	141
Program Evaluation	142
Program Guides	141
Program Proposals	141
[Programed Texts]	010 and 051
Puzzles	999
Questionnaires	160
Rating Scales	160
[Recommendations]	120
Records (Forms)	100 or 110 or 050 group
* Reference Materials	130 (010)
[Regulations]	090
* Reports	140
[Research Methodology Guides]	055
Research Proposals	143
* Research Reports	143
[Research Reviews (Publications)]	070
Resource Materials	050 or 051 or 052 or 055
Scholarly Journals	022
School Newspapers	022
School Publications	Document Dependent
Scripts	030
* Serials	022
Short Stories	030
Slides	100
Specifications	090
* Speeches	150
Standards	090
State of the Art Reviews	070
* Statistical Data	110
Student Publications	Document Dependent
Study Guides	051
Surveys	160 or 143
Tables (Data)	110
Talking Books	100
Tape Recordings	100
[Taxonomy]	134
Teaching Guides	052
[Technical Reports]	143
Test Reviews	142
* Tests	160
Textbooks	010 and 051
Thesauri	134
* Theses	040
[Transcripts (Interview)]	120
[Transcripts (Legal)]	090
[Transcripts (Oral History)]	080
Videodisc Recordings	100
Videotape Recordings	100
* Vocabulary	134
Word Lists	134
Workbooks	051
Worksheets	051
Yearbooks	141 (022)

FOOTNOTES:

1. All terms not in brackets have been selected from the ERIC *Thesaurus*.
2. Conventions A or B = one or the other category is appropriate, depending on item.
   A and B= two categories are appropriate.
   A (B) = a second category might be appropriate, depending on item.
   * = category and term are synonymous. Term should be used in descriptor field only when it denotes subject matter.
3. These terms, like all other Descriptors identifying the form or type of a document, should be used as major Descriptors only when they represent the subject of the document in hand.

FIGURE VII-6: **GUIDE FOR ASSIGNING PUBTYPE CODES (A CROSS-REFERENCE FROM SPECIFIC KINDS OF DOCUMENTS TO MOST APPLICABLE PUBLICATION TYPE CODE)**

(Bracketed terms are not Descriptors)

CODE	PUBLICATION/DOCUMENT TYPES
010	BOOKS
	COLLECTED WORKS
020	—General
021	—Conference Proceedings (See also 150)
022	—Serials
030	CREATIVE WORKS (Literature, Drama, Fine Arts)
	DISSERTATIONS/THESES
040	—Undetermined
041	—Doctoral Dissertations
042	—Masters Theses
043	—Practicum Papers
	GUIDES
050	—General
	—Classroom Use
051	—For *Learner* (Instructional Materials)
052	—For *Teacher* (Teaching Guides)
055	—Non-Classroom Use (For *Administrative and Support Staff, Teachers, Parents, Clergy, Researchers)*
060	HISTORICAL MATERIALS
070	INFORMATION ANALYSES (Literature Reviews, State-Of-The-Art Papers)
071	—ERIC Information Analysis Products
080	JOURNAL ARTICLES
090	LEGAL/LEGISLATIVE/REGULATORY MATERIALS
100	AUDIOVISUAL MATERIALS
110	STATISTICAL DATA (Numerical/Quantitative)
120	VIEWPOINTS (Opinion Papers, Position Papers, Essays, etc.)
	REFERENCE MATERIALS
130	—General
131	—Bibliographies
132	—Directories/Catalogs
133	—Geographic Materials
134	—Vocabularies/Classifications/Dictionaries/Glossaries
	REPORTS
140	—General
141	—Descriptive (Program/Project Descriptions)
142	—Evaluative/Feasibility
143	—Research/Technical
150	SPEECHES, CONFERENCE PAPERS (Individual) (See also 021)
160	TESTS, EVALUATION INSTRUMENTS
170	TRANSLATIONS
999	OTHER/MISCELLANEOUS (Not Classifiable Elsewhere) (Avoid use of this category, if at all possible)

FIGURE VII-7: PUBLICATION/DOCUMENT TYPES

DESCRIPTORS CORRESPONDING TO PUBLICATION TYPE CATEGORIES	
DESCRIPTOR	**PUBTYPE CODE**
AUDIOVISUAL AIDS	100
BIBLIOGRAPHIES	131
BOOKS	010
CONFERENCE PAPERS	150
CONFERENCE PROCEEDINGS	021
DICTIONARIES	134
DIRECTORIES	132
DOCTORAL DISSERTATIONS	041
GUIDES	050
MASTERS THESES	042
PRACTICUM PAPERS	043
REFERENCE MATERIALS	130
REPORTS	140
RESEARCH REPORTS	143
SERIALS	022
SPEECHES	150
STATISTICAL DATA	110
TESTS	160
THESES	040
VOCABULARY	134

FIGURE VII-8: DESCRIPTORS CORRESPONDING TO PUBLICATION TYPE CATEGORIES

These highly specific terms (varied and often transient) usually are not appropriate for the *Thesaurus*. Nevertheless, they can be highly useful access points for the users and must be taken into account in the indexing process. The ERIC solution to this problem is to create a relatively "free" and open subject indexing field called the Identifier field.

Identifiers are not rigidly defined, structured, or controlled as are Descriptors; however, in order to avoid excessive scattering under different word forms, and to aid retrieval, certain standards are observed in their construction.

The *Identifier Authority List* should be consulted to determine the proper format for all existing Identifier concepts. The various categories of Identifiers and the rules for the construction of new Identifiers are covered in detail in Section VIII. The existing categories of Identifiers are:

- Conferences/Meetings;
- Curriculum Areas;
- Equipment (including Computer Programs);
- Facilities;
- Geographic Locations;
- Groups (Ethnic);
- Groups (Occupations);
- Groups (Other);
- Health-Related Terms (including Psychology);
- Historical/Special Events;
- Languages/Linguistics
- Laws/Legislation;
- Methods/Theories;
- Miscellaneous;
- Organizations;
- Personal Names;
- Projects/Programs;
- Science & Technology;
- Tests/Testing;
- Titles (Literature, Films, etc.)

In addition to specific entities, Identifiers may consist of more general concepts that have been introduced in the literature of the system but not yet added to the *Thesaurus*. *Candidate Descriptors, awaiting approval for admission to the Thesaurus, are always "posted" in the ERIC system as Identifiers.*

Selection of Identifiers should be made on the same basis as selection of Descriptors. The Identifier should be considered indexable information if the document contains significant and substantial enough information on the Identifier, *as a subject*, to justify later retrieval. To provide some examples:

- A document which reports on research that exploited Piaget's theory of concept formation is not actually concerned with the theory *per se*. However, the inclusion of PIAGETIAN THEORY as an Identifier would probably be justified because of the interest of researchers in isolating the various applications of the theory.

- A statistical study which happened to run its data through an IBM-360/40 computer should not be indexed by IBM SYSTEM 360 insofar as the type of computer is probably completely incidental to the results. The data could have been arrived at via any number of computers.

- A paper dealing with unemployment among female teachers in New England should be indexed by the geographic Identifier NEW ENGLAND. New England is not the main topic *per se*, but the area of the country inhabited by subjects of a study can be crucial to the meaning and usage of the document and the results reported.

- A history of the National Science Foundation (NSF) should be indexed by the Identifier NATIONAL SCIENCE FOUNDATION, even if the history is published by the NSF and it also appears as the institutional source. The former indexing indicates subject matter; the latter indicates the responsible preparing body. These are two different involvements.

All Identifiers appear in the Resume section of *Resources in Education* or in the Main Entry section of *Current Index to Journals in Education*, and those that are asterisked as Major terms appear in the printed subject indexes. There is no minimum requirement for Identifiers; no more than two (2) Identifiers should be designated as Major.

4. Translation and Negotiation (Indexable Concepts into Approved Terminology

a. Use of an Exact Equivalent, Synonym, Broader Term, Narrower Term, or Two Terms Coordinated

The concepts which have been listed (in the author's or indexer's terminology) as candidates for Descriptors must be translated into the language of the *Thesaurus*. Each concept must be compared with terms in the *Thesaurus* to determine:

- whether an exact equivalent already exists;

- whether a synonym (or near synonym) already exists;

- whether a Broader Term in the *Thesaurus* is adequate for retrieval of the concept;

- whether two or more different existing terms in the *Thesaurus* can be coordinated for retrieval of the concept; or

- whether it is necessary to introduce a new term into the *Thesaurus* in order to cover the concept.

As the indexer attempts to locate applicable terms, the latest edition of the *Thesaurus* (Alphabetical Display) should be used, together with the monthly update sheets (showing new terms added that month) transmitted from the Facility since the last edition. The rotated and hierarchical permutations of the *Thesaurus* vocabulary, described in Section VII.H on "Indexing Tools," should be used as necessary, *but not in lieu of the Alphabetical Display.*

Application of the translation process can best be shown through the use of examples. Let us say that a document reports *"Research on the influences of various factors on the sex role development of 3-to-5-year old preschool children enrolled in a preschool program."* Factors examined were:

- personal traits of the preschoolers (and of their brothers and sisters);
- the "only" child situation;
- intelligence;
- attitudes of parents;
- socioeconomic status;
- type of preschool program; and
- the influence of classmates.

A test to measure each child's intelligence was administered. Several sex role tests were also administered to each child, and two of these, the Draw-A-Person Test and the Toy Preference Test, were discussed in detail and partially reproduced in the document. Procedures surrounding administration of the tests are discussed.

Indexable concepts of the document described seem to be as follows:

PRESCHOOLERS	SOCIOECONOMIC STATUS
SEX ROLE	PRESCHOOL PROGRAMS
BROTHERS AND SISTERS	INTELLIGENCE
ONLY CHILD	SEX ROLE TESTS
INFLUENCE OF CLASSMATES	TEST ADMINISTRATION
ATTITUDES OF PARENTS	DRAW-A-PERSON TEST
PERSONAL TRAITS	TOY PREFERENCE TEST

Taking these terms one at a time:

- "Preschoolers" is listed in the *Thesaurus* with the instruction "Use PRESCHOOL CHILDREN." Look at the full display for that term. The Scope Note defines PRESCHOOL CHILDREN as "aged 2 through 5 years." PRESCHOOL CHILDREN can therefore be used to identify the population studied. In this case, USE A SYNONYM OR NEAR SYNONYM. (Still to be decided is whether this document requires both an age-level descriptor and an education-level descriptor.)

- "Sex Role" appears as a term in the *Thesaurus*, so here USE THE EXACT EQUIVALENT, SEX ROLE.

- "Brothers and Sisters" are two concepts which both appear in the *Thesaurus* with the instruction "Use SIBLINGS." Here again, USE A SYNONYM OR NEAR SYNONYM. There are no other appropriate terms in the display for SIBLINGS because they are either too narrow (TWINS) or not mentioned in the study (BIRTH ORDER).

- "Only Child" is not a *Thesaurus* term. Looking under "One Child Family," "Single Child," and "Single Child Family" meets with no success. Since there seems no way to express this concept with existing *Thesaurus* terms, USE IT AS AN IDENTIFER. Keep a record of this term and the circumstances for its use, for it may become a candidate for a new *Thesaurus* term.

- "Classmates" is not a *Thesaurus* term. The term PEER INFLUENCE is listed in the Rotated Display under "Influence" or "Influences". This seems to get at the concept adequately, so USE A SYNONYM OR NEAR SYNONYM.

- "Attitudes of Parents" is not a *Thesaurus* term. A note under ATTITUDES in the *Thesaurus* recommends using a more specific term, if possible. PARENT ATTITUDES (found in the NTs) is the exact term needed. In this case, the BROADER TERM IN THE *THESAURUS* IS NOT ADEQUATE FOR RETRIEVAL, for although PARENTS and ATTITUDES could be post-coordinated, ATTITUDES could also be post-coordinated with any other population term such as SIBLINGS. Therefore, the precoordinated term PARENT ATTITUDES is preferable because it is more precise.

- "Personal Traits" does not appear in the *Thesaurus*, but PERSONALITY TRAITS does. The Scope Note seems to cover the concept expressed in the document. Look at INDIVIDUAL CHARACTERISTICS, which is mentioned in the Scope Note. INDIVIDUAL CHARACTERISTICS is scoped to include physical as well as psychological characteristics. PERSONALITY TRAITS is preferable because it is the more precise term. USE A SYNONYM OR NEAR SYNONYM in this case.

- "Socioeconomic Status" is another example of a concept with an EXACT EQUIVALENT in the *Thesaurus*.

- "Preschool Programs" is no longer a *Thesaurus* term, but is listed in the *Thesaurus* with the note "Use "PRESCHOOL EDUCATION." Since the children in the study are identified as being enrolled in a preschool program, which is in turn one of the factors studied, use the educational-level term PRESCHOOL EDUCATION in addition to the age-level term PRESCHOOL CHILDREN, which has already been selected to identify the subjects of the study.

- "Intelligence" is also a *Thesaurus* term. However, the terms INTELLIGENCE QUOTIENT and INTELLIGENCE TESTS are listed in the RT display, and the possibility exists that INTELLIGENCE is too broad. Since the document did not state that the test resulted in an intelligence quotient for each child, however, and since the test itself was not discussed in any detail, INTELLIGENCE, the BROADER TERM, IS PREFERABLE.

- "Sex Role Tests" is not a *Thesaurus* term, although SEX ROLE alone is a valid term. It is possible, then, that either TESTS and TESTING could be post-coordinated with SEX ROLE. All three terms could be used for these reasons: TESTS because the tests are discussed in some detail and portions are reproduced in the document; and TESTING because the next concept on our list is "Test Administration," which is cross-referenced "Use TESTING." Thus TWO OR MORE TERMS ALREADY IN THE *THESAURUS* CAN BE COORDINATED FOR RETRIEVAL. However, because TESTS and TESTING are very broad terms (of little value in manual indexes and prone to cause "false drops" in computer searching), the *Thesaurus* is checked further for an appropriate narrower term (NT). The hierarchies of both TESTS and TESTING show a variety of possibilities, but PSYCHOLOGICAL TESTING appears to be the most appropriate concept as it is scoped broadly and is "used for" PSYCHOLOGICAL TESTS. Thus, ONE PRECOORDINATED NARROWER TERM IS CHOSEN TO REPLACE THE TWO BROAD UNITERMS SELECTED ORIGINALLY.

- Since the "Draw-A-Person Test" and "Toy Preference Test" are featured in the document, these terms merit inclusion in the indexing. Since proper names are not *Thesaurus* terms, look in the *Identifier Authority List* to see if they are there to avoid creating variant forms of the names. DRAW A PERSON TEST is there (no hyphens allowed in the IAL); it can be used "as is." TOY PREFERENCE TEST is not there. Since its form meets the guidelines for new Identifiers, create a new Identifier. Both of these test names are thus indexed as Identifiers.

b. Use of a New Descriptor/Identifier

All new indexing terms, neither found in the *Thesaurus* nor the *Identifier Authority List*, should be posted as Identifiers. Procedures for the construction of Identifiers are included in Section VIII, Part 2 of this Manual. All Identifiers are reviewed for proper format by the ERIC Facility lexicographic staff prior to release to the ERIC master files. Any Identifier accumulating significant postings, especially a general conceptual-type term, should be considered for Descriptor status and inclusion in the *Thesaurus*.

If the indexer has arrived at the decision that a new Descriptor will be recommended, it is necessary to:

- research the term;
- locate authorities that can be cited as to its meaning and use;
- develop a definition or Scope Note;
- detect synonyms in whose place the new term will be used;
- place the term somewhere in the hierarchy of existing terms, identifying some terms as Broader (higher in the generic tree), some terms as Narrower (lower in the generic tree), and some as Related (on adjacent branches).

The resultant recommendation is transmitted to the ERIC Facility Lexicographer who provides lexicographic coordination and analysis via the system-wide Vocabulary Review Group (VRG). Candidate Descriptors should be posted as Identifiers until the VRG evaluation has been completed and final dispositions are announced. New Descriptor coordination procedures are fully described in Section VIII, Part 1 (items D, E, and F) of this Manual.

5. Special Issues

a. Indexing Specificity

A fundamental principle of coordinate indexing is to index at the level of specificity of the document in hand. This principle has been referred to earlier; however, enough problems arise in the implementation to warrant a separate discussion.

For purposes of illustration, let us look at the indexes to two issues of *Resources in Education* (1967, #7 and #8). (The examples have been selected for purposes of illustration; there may have been at the time legitimate reasons for these choices of Descriptors.)

1967, #7 - Under BIBLIOGRAPHIES, note a number of "annotated bibliographies" that were not indexed under the specific Descriptor ANNOTATED BIBLIOGRAPHIES.

1967, #8 - Under EVALUATION, note a document dealing with "program evaluation."

1967, #8 - Under FACILITIES, note a document dealing with "educational facilities."

In all these cases, documents were indexed at a higher or more generic level than the document discussed. Users should be able to rely on the reasonable expectation that *all* documents dealing with a specific subject (e.g., EDUCATIONAL FACILITIES) can be found under that term and not be forced to look under some other term. There are at least three particular situations when an indexer must consider this question of generality/specificity especially carefully. These are:

1. When a document discusses a concept at *both* a general and specific level; e.g., a document describing objective tests generally, and multiple choice tests specifically, in about equal detail.

2. When a document discusses a specific (species) concept, but the indexer thinks the document adds useful information to the body of knowledge about the general (genus) concept.

3. When a document discusses many specifics of a general (genus) concept, but none in sufficient detail to merit the indexing of each specific concept.

With reference to (1) above, an indexer might consider, for example, both broader and narrower Descriptors (i.e., OBJECTIVE TESTS and MULTIPLE CHOICE TESTS) as indexable concepts. If there is a sufficient amount of information worth indexing (always a matter of judgment) about both general and specific concepts, then they are both indexed.

In the case of (2) above, the indexer may index at the general level, even if the general concept is not discussed *per se*. For example, a very extensive description, study, or review of the well-known Wechsler Adult Intelligence Scale (WAIS) should be indexed by INTELLIGENCE TESTS, as well as by an Identifier. If the ERIC system covered only the literature of educational tests and measurement, this guideline might not be given. However, since ERIC's users are likely to be interested in the whole area of tests at varying levels of specificity, this document should be made accessible at a "reasonably" general level (i.e., INTELLIGENCE TESTS, not TESTS) and at the level of the specific test name as well. This guideline requires expertise, knowledge of the system's users, and mature judgment. Further subject specificity may be provided as necessary by Indentifiers, but Identifiers should not be used *in lieu of* the most specific available Descriptor.

The third area (3) above, is perhaps the most troublesome. The indexer must develop a "feel" for what is sufficient or reasonable information about a concept that makes it "indexable." Experience in reviewing search results, as well as in indexing, can be helpful in this area. Some examples may illustrate this problem.

- Example 1:

  Document ED 010 856 indexes AGRICULTURAL PERSONNEL. As the abstract indicates, the population of participants included:

  - extension personnel;
  - agricultural teachers;
  - home economics teachers;
  - forestry personnel;
  - professional employees in agribusiness.

  In the judgment of the indexer, there was insufficient data about the various groups to merit indexing each specific occupational group. The groups, however, were part of the class "agricultural personnel," and that concept only was indexed. (Parenthetically, it is noted that EXTENSION AGENTS was also indexed, perhaps reflecting the particular Clearinghouse's special interest in that concept.)

- Example 2:

  In describing the population of its study, a document lists in tables their:

  - age;
  - sex;
  - educational level;
  - participation rate of conference attendance.

  The indexer must decide whether the information provided is significant enough to index specifically. Since none of the above factors were variables in the study, the indexer decided to index the group of concepts at the generic level PARTICIPANT CHARACTERISTICS.

- Example 3:

  A document entitled *Guidelines for the Referral of Children Who Are Suspected or Known to be Exceptional* describes and defines *in detail* the:

- crippled and health impaired;
- hearing impaired and deaf;
- blind and partially seeing;
- emotionally disturbed;
- socially maladjusted;
- slow learners;
- mentally retarded;
- multiply handicapped;
- gifted.

Because of the amount of detail provided for each category, the indexer decides that this document should be retrievable through the generic concepts EXCEPTIONAL PERSONS and DISABILITIES, as well as through each specific area of exceptionality mentioned above.

- Example 4:

A program guide entitled the *La Grange Area Department of Special Education Handbook* describes a sizable, reputable program which includes education of the:

- mentally retarded;
- physically handicapped;
- socially maladjusted;
- emotionally disturbed.

However, nearly all guides for "Special Education" programs include and describe each of these areas. The information on each area of exceptionality is usually similar throughout these guides. Their inclusion in such a guide is implicit and need not be indexed. In contrast to the previous example, the areas of exceptionality covered are not indexable information. The document should be indexed by the concepts PROGRAM GUIDES and SPECIAL EDUCATION, and terms representing its grade level and origin (school district).

b. Major/Minor Index Terms

(1) General

The ERIC indexer is required to identify the "Major" and most important concepts contained in a document by immediately preceding the equivalent term or terms selected with an asterisk (*). The rule is that at least one (1) and not more than five (5) Descriptors (six if only one major Identifier is used) may be designated as Major. Only two (2) Identifiers may be designated as Major. All index terms not preceded by an asterisk are automatically considered "Minor" for that document. Any index term may be Major or Minor, depending on the document.

The purpose of this arrangement is to:

- identify the chief or major concepts in the document, thereby providing the reader of RIE or CIJE with additional information and help in the search and evaluation of relevant references on a particular subject.

- provide at least one subject route to the document in the RIE/CIJE printed subject indexes, but not so many as to make the indexes excessively large.

- provide searchers of the data base the capability of designing either broad, exhaustive searches that aim at comprehensive recall of all references on a subject, or narrower, targeted searches that aim at selective retrieval of some (but perhaps not all) references highly relevant to the subject.

As with the Generic/Specific guidelines, sufficient problems arise in the implementation of the Major/Minor guidelines to warrant additional discussion and examples.

(2) Utility of Terms for the Printed Indexes

Problems occur in this area when the Major terms that emerge are excessively focused, thereby providing insufficient access routes. The ERIC indexer must be aware that the results of the indexing function are used by both manual and computer searchers. This does not mean, however, that the indexer should forget the fundamental rule to "Index to the specific level of subject matter covered by the document." Rather, it means that the indexer, taking full advantage of the *Thesaurus* must consider and provide legitimate access points for both groups.

Especially for manual searchers (who cannot search on second or third words appearing in a given Descriptor), the major Descriptors assigned should provide as many valid access routes as possible under the circumstances. An example can help make this point. Assume the major terms assigned to a document were: *COLLEGE CURRICULUM; *COLLEGE INSTRUCTION; *COLLEGE SCIENCE; *COLLEGE STUDENTS. The indexer, in reviewing such work, should clearly look for legitimate ways to introduce more "spread" in the indexing. Not only is it likely that more specific terms are appropriate, but without them the manual user would be at a disadvantage by being limited in retrieval to solely the "College" part of the printed index.

A second type of problem occurs when the major terms assigned are so specialized that all by themselves in the printed indexes they excessively restrict user access points (i.e., the users simply wouldn't think to look under them in many cases). Given a document on heterogeneous and homogeneous

grouping within the instructional process, not only would the very specific Descriptors HETEROGENEOUS GROUPING and HOMOGENEOUS GROUPING be appropriate, but so would the most specific "instruction" term——in this case GROUP INSTRUCTION. If only the very specialized terms were used, access would be unnecessarily limited and the manual user would be at a disadvantage.

It is important for a specialized Clearinghouse (or any specialist for that matter) not to confuse their own viewpoint and interests with those of all other users. It is prudent, therefore, during the indexing process, to step back at least once and consider the problem of access to a given document by all of its potential users. Again, the rule of indexing to the specific level of subject matter dealt with by the document must be observed. The guidance here merely suggests that legitimate variegated access routes to a document not be ignored.

(3) Excessively Broad Terms

Excessively broad terms (e.g., DEVELOPMENT), which lack discrimination, and which if used without restraint might collect large numbers of postings in a single journal issue, should also be avoided as Majors, just as they should generally be avoided in the indexing process as a whole. Examples of very broad Descriptors that should be used very selectively and only in situations really calling for them are displayed in Figure VII-9.

(4) Terms Not Representing Subject Matter

Terms that represent population concepts, educational level, age level, methodology, and document type characteristics can be thought of as not representing the subject matter of the document, at least in the same sense that a clear subject matter term like GEOLOGY does.

Since the applicability of these non-subject terms to a document is generally a yes-no proposition and not a matter of degree, the question arises as to how to handle major-minor indicators vis-a-vis these terms.

Such Descriptors should be made minor in cases where they do no more than identify the intended education level, age level, population, research methodology, type of document, etc. However, such Descriptors *may* be made Major when they are the topic of significant discussion in the document. In such situations these terms become, in effect, subject terms and should be handled the same way as subject terms, i.e., if the document contains substantial discussion *about* the concept then the term representing that concept should be made Major no matter what type of term it is.

ABILITY
ACHIEVEMENT
ACTIVITIES
ATTITUDES
BACKGROUND
BEHAVIOR
CHANGE
COUNSELING
COURSES
CULTURE
CURRICULUM
DATA
DESIGN
DEVELOPMENT
EDUCATION
EMPLOYMENT
ENVIRONMENT
EQUIPMENT
EVALUATION
FACILITIES
GROUPS
GUIDANCE
GUIDES
IMPROVEMENT
INFLUENCES
INSTITUTIONS
INSTRUCTION
LANGUAGE
LANGUAGES
LEARNING
METHODS
NEEDS
OBJECTIVES
OCCUPATIONS
ORGANIZATION
PARTICIPATION
PERFORMANCE
PERSONNEL
PLANNING
PROBLEMS
PROGRAMS
PUBLICATIONS
RELATIONSHIP
REPORTS
RESEARCH
RESOURCES
RESPONSIBILITY
SCHOOLS
SCIENCES
SELECTION
SERVICES
SKILLS
STANDARDS
STATUS
STUDENTS
STUDY
TEACHERS
TESTING
TESTS
THEORIES
THERAPY
TRAINING

FIGURE VII-9: BROAD DESCRIPTORS

In order to clarify this point a number of examples follow:

- Educational Level

  A catalog of math concepts and skills for fifth grade math would use GRADE 5 as a major Descriptor and INTERMEDIATE GRADES as a minor Descriptor (the latter indicating mandatory educational level). However, a review of textbooks to determine what math concepts are usually taught in grades 4, 5, or 6 might have INTERMEDIATE GRADES as a major Descriptor (indicating subject content).

- Population or Age Level

  A report of a study that used disadvantaged black teenagers (ages 14-16), but that did not discuss the significance of their being black or teenagers would use BLACK YOUTH and ADOLESCENTS as minor Descriptors (indicating population and age level). However, a study entitled *The Career Planning Frustrations of Black Teenagers* would probably have the same Descriptors as major (indicating significant subject content).

- Methodology

  A report of a research study that made use of matched groups and even included some discussion of the appropriateness of such a technique might use MATCHED GROUPS as a minor Descriptor. On the other hand, a paper on the futility of setting up matched group research designs for a particular type of research should use MATCHED GROUPS as a major Descriptor (representing major subject content).

- Document Characteristics/Publication Type

  A curriculum package that contains a teacher's guide and student workbook, among other materials, would use WORKBOOKS as a minor Descriptor (representing document characteristics/type). A description of a curriculum development project which designed and field tested a workbook should use WORKBOOKS as a major Descriptor.

  An automechanics curriculum guide containing behavioral objectives, suggested activities, and evaluation questions keyed to the objectives might have CURRICULUM GUIDES, BEHAVIORAL OBJECTIVES, LEARNING ACTIVITIES, and CRITERION REFERENCED TESTS as minor Descriptors (document characteristics/publication type). A teacher's manual with instruction in how to design curriculum guides or how to develop and evaluate behavioral objectives would have CURRICULUM GUIDES or BEHAVIORAL OBJECTIVES as major Descriptors (representing major subject content).

c. Capitalization of Index Terms

The ERIC data base is an upper and lower case file and all index terms must be entered into the ERIC records in correct upper and lower case form.

The *Identifier Authority List* (IAL) is printed in upper and lower case and presents no problem in this regard. All the indexer has to do is use the form as printed in the IAL. The indexer will find that the initial letters of every Identifier word, usually excepting certain conjunctions, articles, and prepositions, are in upper case in the IAL.

The ERIC *Thesaurus* "Working Copy" is currently printed in all upper case version *only* and therefore the indexer must remember to convert all Descriptors to initial capital letters only.

Articles, conjunctions, and prepositions are never capitalized in Descriptors unless they are the first word. There are, however, certain Identifiers where articles, conjunctions, and prepositions are appropriately capitalized, e.g., book titles such as "Graduate (The)." Some examples appear in Figure VII-10.

d. Punctuation of Index Terms

Punctuation of Descriptors and Identifiers is kept to a bare minimum because the special characters used in punctuation can later create severe matching problems in the retrieval process. The only punctuation marks permitted as part of index terms are left and right parentheses (as used to enclose a qualifier). *Hyphens, dashes, apostrophes, quotation marks, periods, commas, and all other such special characters, are invalid in the Descriptor and Identifier fields.*

Semicolons are used as subfield delimiters, separating one index term from another, but are not valid as part of an index term.

e. Over-Indexing and Under-Indexing

One of the most prevalent indexing faults is the assignment of too many or too few index terms. These two faults tend to be mutually exclusive. The indexer that over-indexes generally does not also under-index, and vice-versa.

Over-indexing is generally the result of laziness and the failure to take the time to decide what is truly indexable information and what is merely mentioned in passing. It takes less time to over-index than to index with discrimination.

	DESCRIPTORS		IDENTIFIERS	
ARTICLES/ CONJUNCTIONS/ PREPOSITIONS	**USUAL USAGE (LC) (EXAMPLE)**	**EXCEPTION (UC) (EXAMPLE)**	**USUAL USAGE (LC) (EXAMPLE)**	**EXCEPTION (UC) (EXAMPLE)**
A	Postsecondary Education as a Field of Study	None	To Kill a Mockingbird	A Better Chance Inc
AN	None	None	To an Athlete Dying Young	---
AND	Food and Drug Inspectors	None	Crime and Punishment	And Searching Mind*
AS	Postsecondary Education as a Field of Study	None	Maryland Self Concept as a Learner Scale	As You Like It
BY	Management by Objectives	None	Baghdad by the Bay*	By Love Possessed*
FOR	English for Special Purposes	None	Fund for Adult Education	For Whom the Bell Tolls*
IN	Reduction in Force	In State Students	Catcher in the Rye	In Cold Blood
OF	Leaves of Absence	None	Epic of Gilgamesh	Of This Time of That Place
ON	State Committees on Education (UF)	On Campus Students On the Job Training	Soul on Ice	On the Origin of Species
PER	Expenditure per Student	None	---	Per Capita*
THE	State of the Art Reviews	None	College of the Sea (England)	Graduate (The)
TO	Adjustment (to Environment)	None	Pathways to Identity Project	To Kill a Mockingbird

*Not currently an Identifier

FIGURE VII-10: CAPITALIZATION OF ARTICLES/CONJUNCTIONS/PREPOSITIONS IN DESCRIPTORS AND IDENTIFIERS

Under-indexing is generally the result of failure to put oneself in the shoes of the searcher or end user. An under-indexed item is generally either tagged with a few broad terms behind which the document is effectively lost, or it is tagged with a few specialized terms the indexer is grateful to find in the title or abstract.

It is not easy by precept alone to cure these two indexing ailments. Occasionally over-indexing is caused by the inclusion of several terms all beginning with the same lead-in word, e.g., Parent Education; Parent Participation; Parent Conferences. The indexer, abrogating the responsibility to choose the "best" term to represent a given conceptual area, takes the scattergun approach and throws in all the possibilities. Occasionally over-indexing can be attributed to an imbalance between the size of the document (i.e., small) and the number of index terms (i.e., many). The indexer, forgetting the user, proceeds on a lock-step course and zealously squeezes every concept out of a five-page paper even though many terms may be represented by less than a page of text. No user will thank such an indexer.

6. Indexing Review

After the indexer has completed all the basic tasks involved in indexing, i.e.:

- examination of the document;
- identification of indexable concepts;
- translation of selected concepts into *Thesaurus* terminology;
- tagging of major concepts/terms;
- recommendations for new terms—completion of *Vocabulary Development Form* (see Section VIII);
- recording of final terms on Resume Form (see Section V), etc.

the finished product should receive a final review. This review may be accomplished by the indexer or by a Supervisor/Reviewer. The following questions should be asked about the work:

1. Do the designated Major terms represent the emphasis of the document?
2. Are the major terms reflected (at least conceptually or by equivalent terms) in the Abstract or Title, so that there may be no question in the user's mind about their relevance?
3. Are the possibilities for "False Drops" minimal?

4. Are all significant and important concepts in the document covered by Descriptors (or Identifiers)?

5. Can the index terms be fitted together in narrative form to provide an accurate idea of the subject matter of the document?

6. Has excessive "clustering" of terms beginning with the same word been avoided?

7. Do the Major terms provide a class description that could be expected to occur spontaneously to a user, or are they too specialized and obscure?

8. If the scope of the document overlaps with other Clearinghouses, have their viewpoints been taken into account (e.g., via examination of their scope of interest statement and "most frequently used Descriptors" list)?

See also the "Summary of Significant Rules" appearing at the beginning of this Section.

7. Recording Indexing on Resume Form

The rules for transcribing onto the Resume Form all Descriptors and Identifiers finally selected to index a document, and for identifying them as Major or Minor, are provided in the "Cataloging" Section of this Manual (Section V).